REMARKS

The present application has been carefully reviewed in light of the Office Action dated January 20, 2004. Claims 1-30 are currently pending in the application. Claims 1, 6-8, 10-12, and 14-18 have been amended. New claims 19-30 have been added. No new matter has been introduced. Reconsideration and allowance of the application are respectfully requested.

Claims 1-3 and 14 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,757,008 to Akagawa et al. ("Akagawa"). The rejection is respectfully traversed.

The present invention relates to active pixel sensors formed in a p-type substrate and having an n-type photosensitive element and reset and readout circuits having p-type transistors. One advantage of the active pixel sensors formed in accordance with the present invention, over a pixel sensor having n-type transistors, is increased radiation hardness of the sensor, without the need for a protective enclosure.

Unlike the current invention, Akagawa teaches the use of a thermal infrared-ray image sensor utilizing Schottky diodes and bolometers for producing a signal representing the incoming infrared light rays based on the temperature of the sensor. Col. 3, lines 34-38. Akagawa does not teach or suggest all of the claim limitations recited by the rejected claims. Specifically, Akagawa does not teach or suggest an image sensor comprising an n-type photosensor for producing an electrical signal and "a p-type source follower transistor for receiving said electrical signal at a gate thereof and for producing therefrom a pixel output signal," as recited by independent claims 1 and 14. Akagawa does not utilize a source follower transistor for reading out a signal from the photosensitive region. Instead, Akagawa teaches a Schottky diode 21-24 connected to a vertical switch 11, which connects the diode 21 to a vertical readout line 37. (Fig. 14). This is an entirely different pixel architecture from that claimed. For at least these reasons, Akagawa does not anticipate the claimed invention.

Claims 2-3 depend from claim 1, and therefore, contain every limitation recited by claim 1. For at least these reasons, withdrawal of the rejection of claims 1-3 and 14 is respectfully requested.

Claims 4-5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Akagawa in view of U.S. Patent No. 6,252,218 to Chou ("Chou"). The rejection is respectfully traversed.

Claims 4-5 depend from claim 1 and contain every limitation recited by claim 1. The combined disclosures would not have rendered obvious the embodiments of the invention defined by either of the rejected claims. Specifically, in order to render obvious the claimed invention, "there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. . .[and] the prior art reference (or references when combined) must teach or suggest all the claim limitations." M.P.E.P. § 2142.

For whatever Chou teaches regarding the geometric layout of photodiodes, Chou does not cure the deficiencies of Akagawa discussed above. Neither reference, whether considered alone or in combination, teaches or suggests an n-type photodiode for generating an electrical signal which is received at a gate of a p-type source follower transistor. Moreover, the Office Action provides no objective motivation, other than the existence of the references themselves, to combine the hexagonal photodiode structure taught by Chou with the thermal Schottky diode used in an infrared sensor, as taught by Akagawa. For at least these reasons, withdrawal of the rejected claims is respectfully requested.

Claims 6-8, 10-12, 15-17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Akagawa in view of U.S. Patent No. 5,372,955 to Yang ("Yang"). The rejection is respectfully traversed.

Claims 6-8 depend from claim 1 and contain every limitation recited by claim 1; similarly, claims 15-17 depend from claim 14 and contain every limitation recited by claim 14. Even if *arguendo*, there exists an objective motivation to combine the teachings of Akagawa with the teachings of Yang, the combination does not render obvious the claimed invention. Specifically, for whatever Yang teaches regarding the use of ring guards and wells, Yang does not cure the deficiencies of Akagawa as discussed above. Yang does not teach or suggest a p-type source follower transistor receiving an electrical signal at its gate which is generated by a photosensitive element, as recited by each of the rejected claims. For at least these reasons, withdrawal of the rejected claims is respectfully requested.

Independent claim 10 recites an image sensing device comprising, *inter alia,* "a p-type source follower transistor for receiving said electrical signal at a gate thereof and for producing therefrom a pixel output signal." For at least the reasons discussed above regarding the allowability of claims 1 and 14, claim 10 is also allowable. Claims 11-12 depend from claim 10, and accordingly contain every limitation recited by claim 10. For at least these reasons, withdrawal of the rejection of claims 10-12 is respectfully requested.

Claims 9, 13, and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Akagawa in view of U.S. Patent No. 5,881,184 to Guidash ("Guidash").

Claims 9, 13 and 18 depend from claims 1, 10 and 14, respectively, and contain every limitation recited by the respective independent claim. Even if *arguendo*, there exists an objective motivation to combine the teachings of Akagawa with the teachings of Guidash, the combination of references would not render obvious the claimed invention. Specifically, for whatever Guidash teaches regarding pixel reset, Guidash does not cure the deficiencies of Akagawa, as discussed above. Guidash does not teach or even suggest a p-type source follower transistor arranged as recited by each of the rejected claims. For at least these reasons, withdrawal of the rejection of claims 9, 13, and 18 is respectfully requested.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Dated: April 20, 2004

Respectfully submitted,

By_____

Thomas J. D'Amico
Registration No.: 28,371
Megan M. Sunkel
Registration No.: 53,655
DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP
2101 L Street NW
Washington, DC 20037-1526
(202) 785-9700
Attorneys for Applicant